



Model CPGD10-100V Methane Sensing System

**For Continuous Monitoring of Methane
In Vacuum Gas Streams Providing Early
Warning of Oxygen Ingression**

CPGD10-100V

Carbon Controls Ltd offers process gas sampling systems for combustible and toxic gases. The CPGD10-100V Methane Sensing System is custom designed to continuously monitor an incoming gas sample for Methane on Natural Gas applications. A Primary application is to replace traditional Oxygen Sensing Systems on Vacuum Screw Compressors.

Traditional Oxygen Sensing Systems employ passive sensor technology that directly measures the O₂ ingress into the gas stream when operating systems are on vacuum. Common problems with these systems revolve around the short life of the passive sensor, which causes high maintenance and replacement costs. Passive sensor technology is also not fail safe, and therefore monitoring system failure without operator notification can occur, creating a potentially explosive situation.

The Carbon Controls CPGD10-100V system uses Active Technology for the sensor, providing a fail-safe approach to the monitoring system. The sensing element is continuously exposed to 100% levels of Methane and infers Oxygen ingress when this signal drops below a specified setpoint. Using this approach provides no requirement for sensor calibration during the service life of the system.

This system differs from all other models because it utilizes silicon based solid-state sensors. The complete optomechanical design and construction is so stable that an ultra fast speed of response can be achieved whilst providing unparalleled service life and detector stability. This ultimately saves on maintenance and service costs.

Features

- No Field Calibration Required
- No Replacement of Sensor Required
- Solid State IR Sensor with 15 Year Warranty
- Early Dirty Optics Warning
- Failsafe Methane Monitor
- Immune to H₂S Contaminants
- Class 1, Zone 1 Certified
- Tube In – Tube Out Connections for Easy Installations
- High Quality Stainless Steel Tubing and Fittings
- Stream Isolation Capabilities Built-In
- 0-20mA Analog Output for Monitoring
- HART® Communications Available
- Optional Relay Alarm Outputs

Benefits

- Low Maintenance Required
- Low Cost of Ownership
- No Un-Detected Sensor Failures
- Improved Preventative Maintenance
- High Level of Reliability and Safety
- No Poisoning of Sensor
- Ease of Installation Lowers Costs
- Maintenance can be Performed without Shutting Main Pipeline Process Down
- Owner Confidence in System Operation and Monitor Readings

Applications

- Oxygen Sensing Process Requirements
- Hydro-Carbon Sensing Process Requirements
- Carbon Dioxide Sensing Process Requirements
- Pipeline Gas Sampling Systems or Continuous Monitoring Systems
- Vent Gas Sampling Systems or Continuous Monitoring Systems

Technical Data

General

Detection Method	IR Absorption
IR – Sensor	Solid State IR Source, 50 Hz
Gases Detected	Hydrocarbons
Calibration	Methane 100% by Volume
Self Test	Continuous
Input Pressure	5 - 1000 psi (consult factory for higher ranges)
Output Pressure	2-10 psi regulated
Gas Stream	Clean and Dry for best operation / limited capacity filter part of package

Performance

Lifetime Stability	±5% of full scale reading
Accuracy	±3% FS from 0-50% reading ±5% FS from 50-100% reading
Response Time	T90 = 6 seconds
Start-up Time	Less than 60 seconds

Output Signal

Standard	0-20mA Current Source
Option	HART®
Option	Relay (3) Alarm Output
Warnings:	
Early clean optics	Pre-warning (1mA Pulse)
Clean optics (1mA)	Dirt /Liquid accumulation
Detector Failure	Internal fault (0mA)

Electrical

Power Supply	24 VDC, range 18-32 VDC
Power Consumption	Approx 3.5W
Connections	3 wire 0-20mA standard HART® and Relays option
Cable Entry	½" NPT Conduit Connection

Temperature Range

Storage	-40 to +70 degrees C
Operating	-40 to +60 degrees C
Gas Stream	Maximum 60 degrees C
Humidity	Gas Stream should be dry, limited filtering of liquids is provided

Explosion Proof

Main compartment	EExd IIC T6
Terminal comp.	EExe increased safety
Protection Category	IP66/IP67

Mechanical

Detector Material	Stainless Steel
Piping / Fittings	Stainless Steel
Flow Meter	Glass Lined / Stainless with Polycarbonate cover
Valves	Stainless Steel
Backpan	Painted Steel
Pressure Gauges	Stainless Steel typical

Warranty

Gas Detector	5 years on complete unit
Gas Sensor Source	15 years on the IR source
System parts	1 year on system parts

Approvals

CSA	Standard C22.2 No. 152
ATEX	Directive 94/9EC
SAA	AS 2380.1 / 2380.2 / 2380.6
UL	Available
SIL	Qualified for SIL 2 and SIL 3
CRN	Pressure Fittings Contain Canadian CRN numbers

Accessories

Gas Cooler	Coil tubing to aid in cooling inlet gas stream
Captured Drain	Stainless pressure container for capturing coalescing filtered liquids from inlet gas stream
Pressure Gauges	Optional ranges available on supplied gauges depending on pressure inlets
Display	Optional Display available backlit 64x128 pixel LCD
Enclosure	NEMA 4 Enclosures available when pressure is not free flowing
Pump / Aspirator	